RAPID GRADING OF INDONESIAN BLACK TEA (CAMELLIA SINENSIS) USING NEAR INFRARED SPECTROSCOPY FOLLOWED BY PRINCIPAL COMPONENT ANALISIS

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ABSTRACT

Determination of quality and classification before the transaction is an important step, because appreciation levels and transaction value of black tea (*Camellia sinensis*) are determined by the quality and classification of products. However, making good classification needs good technique and production processes. Unfortunately, a long process production of black tea usually has some problems, for example: mixed one grade with another grade, different labeling with package containers, and inconsistency in production process between other groups of production. This paper reports an alternative method of quality classification (grading) on black tea (*Camellia sinensis*) of ortodox group with Fourier Transform-Near Infrared Spectroscopy (FT-NIRS). Spectral data obtained from the measurement result by FT-NIRS further chemometricly processed using the method: Principal Components Analysis (PCA). That technique was developed by 164 samples consist of 4 grades including Dust II, BOP, BT II, and FANN II. All of the grades were derived from the 27 estates in Indonesia. Of the 164 samples are used, 123 samples are taken as a data-trained (training set, TS) and 41 samples are as data validation (Validation set, VS). Results show that the application of this method can classify 4 types of different grade tea with more than 90% rapidly and non-destructive accuracy.

Keywords: classification, black tea, orthodox, spectroscopy, analytical